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0404N71

Candidate's Seat No :_____

M.Sc Semester-4 Examination

509

Polymer Science

April-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Question – 1 Write the following in detail **Marks**

(i) Write a note on Biopolyesters. **07**

(ii) Describe the comparative study of reprocessed PE/Starch on film properties, recycling other degradable. **07**

OR

(i) Describe the step-by-step method to produce PE/corn starch-based biodegradables. **07**

(ii) Write the advantages and disadvantages of Biodegradable polymers. **07**

Question – 2 Write the following in detail

(i) Explain the soil burial test of starch based biodegradable polymers in detail. **07**

(ii) How does chemical degradation start biodegradation? Explain briefly. **07**

OR

(i) Enlist starch-based biodegradable polymers and describe any one. **07**

(ii) What is the standard adopt for the biodegradable plastic testing? Explain any one in detail. **07**

Question – 3 Write the following in detail

(i) What are the physical factors that influence enzyme activity? Explain briefly. **07**

(ii) Elaborate the method of producing starch-based biodegradable polymers in detail. **07**

OR

(i) Describe the petri-dish screen test for the biodegradable plastics. **07**

(ii) Define biodegradability. What are the criteria used in the evaluation of biodegradable polymers. **07**

Question – 4 Write the following in detail

(i) What is biodegradable polymer? Give an example of biodegradable polymer? **07**

(ii) Explain the method of composting biodegradables in brief. **07**

OR

(i) What are the problems occurring during recycling of PE/starch biodegradable plastic? Discuss in short. **07**

(ii) What are enzymes and how are they classified? **07**

Question – 5 Give short answer (attempt any seven out of twelve) **14**

(i) The factors that influence polymer biodegradation are_____.
(a) Physical factors
(b) Morphological factors
(c) Chemical factors
(d) All of the above

(ii) Composting occurs at the following stages _____.
(a) Cooling and maturation
(b) Thermophilic
(c) Mesophilic
(d) All of the above

(iii) _____ biodegradable polymers are created by combining raw materials such as microbial fermented lactic acid.
(a) PGA
(b) PHBV
(c) PLA
(d) PHB

(iv) The _____ process is characterised by the sequential growth and depletion of microbial subpopulations.

P.T.O

(a) Composting test
(b) Soil burial test
(c) Petri-dish test
(d) All of the above

(v) Biodegradable polymer degradation is followed by_____.
(a) Both (b) and (c)
(b) Biological activity
(c) Enzymatic activity
(d) None of the above

(vi) A _____ polymer is a type of biodegradable synthetic polymer.
(a) Collagen
(b) Dextran
(c) PLA
(d) Starch

(vii) The ASTMD standards for Accelerated Weathering (UV) tests are _____.
(a) ASTM D4459
(b) ASTM D2565
(c) ASTM D4329
(d) None of the above

(viii) During bulk erosion process of polymer, the hydrolysis occurs throughout the_____.
(a) Bulk of the polymer
(b) Interface of the polymer
(c) Surface of the polymer
(d) All of the above

(ix) Because of its_____, starch is not used in its natural form.
(a) Poor in dimensional stability
(b) Poor in processability
(c) Poor in mechanical properties
(d) All of the above

(x) _____ examined the exposed surface of biodegradable polymer samples.
(a) Energy dispersive X-ray
(b) X-ray diffraction
(c) Scanning electron microscopy
(d) None of the above

(xi) Which of the following is not an enzyme group?
(a) Lyases
(b) Ligases
(c) Hydrolases
(d) Aminases

(xii) The biodegradation of plastic caused by the action of naturally occurring microorganisms such as _____.
(a) Bacteria
(b) Fungi
(c) Algae
(d) All of the above

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